

## **REMARKS**

### **Claim Rejections - 35 U.S.C. § 102 and § 103**

The Examiner has rejected claims 7, 12-23, 25, and 27-29 under 35 U.S.C. 102(b) as being anticipated by *Reinhardt* (U.S. Patent No. 6,747,243). The Examiner has rejected claims 8-11 and 26 under 35 U.S.C. 103(a) as unpatentable over *Reinhardt* in combination with *Allen et al.* (U.S. Patent Application Publication No. 2004/0182416 A1). Applicant has amended claims 7, 17, 25, and 29 such that they incorporate language from the specification that defines term "ablation" as causing a particle defect to undergo "explosive evaporation." Claims 8-9 have been cancelled consistent with amended claim 7. It is Applicant's understanding that neither *Reinhardt* nor *Allen*, alone or in combination, disclose each and every element of the invention as claimed or render obvious the invention as claimed. Accordingly, Applicant respectfully requests the Examiner withdraw the rejections to claims 7, 10-23, and 25-29.

The term "ablation" is defined in paragraph 16 of the specification as follows:

*"Ablation is defined herein as the process of directing the laser beam onto the particle defect then pulsing the laser beam, in the femtosecond pulse range, so that the laser pulse 208 strikes the particle and heats the particle to a very high temperature, in a very short period of time, causing evaporation and fragmentation of the particle 206 to occur almost simultaneously, as shown in FIG. 2C, thus causing the particle defect 206 to undergo explosive evaporation 210. In other words, ablating causes the thermal gradient in the particle defect to increase rapidly and create substantial internal stress that causes the particle defect to vaporize 210" (emphasis added).*

In claims 7 and 10-16, Applicant claims a method for focusing a short pulse laser beam onto a particle defect and ablating the particle defect, "*wherein ablating causes the particle defect to undergo explosive evaporation*" (emphasis added). In claims 17-23, Applicant claims a system comprising a particle defect detector and a short pulse laser that "*cause[s] explosive evaporation of the particle defects*" (emphasis added). In claims 25-29, Applicant claims a method for scanning the surface of a wafer for particle defects, aligning a short pulse laser, and focusing the laser on the particle defects "*to cause explosive evaporation of the particle defects*" (emphasis added).

While *Reinhardt* does employ the term "ablation," it is used in a different sense than by the Applicant, and its scope is also more limited than the accepted meaning offered by the Examiner in the March 17, 2006 response. *Reinhardt* discloses a method by which particles are removed as occurring through "thermal shock" (Col. 11, lines 37, 48), and that once "the defect is removed from the substrate, a cool gas flow such as a nitrogen flow, may be provided over the substrate surface to "carry away" the removed defect and prevent redeposition of the defect on another area of the substrate surface." (Col. 11-12, lines 66-3). Thus, *Reinhardt* does not disclose a process by which the particle defect is ablated by explosive evaporation. Instead, *Reinhardt* discloses a process by which a particle defect is ablated by thermal shock and then may be carried away while in the solid state. In fact, *Reinhardt* teaches away from ablation by explosive evaporation in the background section where it is stated: "it is difficult to vaporize the contaminant without also damaging the underlying treatment surface." (Col. 2, lines 64-66). In

contrast, Applicant teaches and claims a technique utilizing ablation by explosive evaporation that minimizes the amount of damage to the substrate. Therefore, *Reinhardt* does not disclose the element of ablating a particle defect by explosive evaporation as claimed by the Applicant.

*Allen* discloses a method for pulling particles off the surface by explosive evaporation of a transfer medium rather than evaporating the particles themselves. Paragraph 34 of *Allen* states "... by properly configuring the energy transfer medium, drag forces within the energy transfer medium can be utilized to "drag" or pull the particle(s) off the substrates during explosive evaporation of the energy transfer medium from the surface of the substrate." Hence, *Allen* "explosively evaporates" not the particles themselves, but the energy transfer medium, leading to the pulling of the particles off of the surface. Therefore, *Allen* does not disclose the element of ablating a particle defect by explosive evaporation as claimed by the Applicant.

Accordingly, Applicant respectfully submits that the invention claimed in claims 7, 10-23, and 25-29 is not anticipated by *Reinhardt* under 35 U.S.C. § 102(b) and respectfully requests the withdrawal of the rejection to claims 7, 12-23, 25, and 27-29. Likewise, as neither *Allen* nor *Reinhardt* discloses explosive evaporation of the particle itself, the combination cannot be interpreted to disclose the claimed element. Therefore, the combination cannot render obvious Applicant's invention claimed in claims 7, 10-23, and 25-29, and Applicant respectfully requests the withdrawal of the rejection to claims 10-11 and 26 under 35 U.S.C. § 103(a) over the combination.

Pursuant to 37 C.F.R. 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

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